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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,881	06/09/2000	Jeongmin Moon	3430-0105P	1734

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EXAMINER	
NGUYEN, HOAN C	
ART UNIT	PAPER NUMBER
2871	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/589,881	MOON, JEONGMIN	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-11,14-18,21 and 24-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6-11,14-18,21 and 24-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/17/2010 has been entered.

Claims 1-2, 6-11, 14-18, 21 and 24-27 are pending.

Response to Argument's applications:

Examiner would like to remind the applicants that ***all evidences*** provided or presented as prior arts or inventive matters in the reference Shinji can be used to reject.

In the interview on 10/26/2010, Mr. Robert Webster argues that Shinii covers the slope angle of less than 5 degrees (known prior art considering as bad slope angle; however, ***Mr. Webster ignored the conditions of the width and the height that also disclosed in Shinji, but were not disclosed and claimed in the instant application***).

In Remarks filed on 12/17/2010, applicants repeat the same scenario:

> "Shinji states, in col. 7, lines 5-13, that when the slope angle is zero degrees or 2 degrees, the scattering reflection efficiency is less than one and is bad even when the height to width ratio is equal to or greater than 0.6, thereby teaching away from using slope angled less than 5 degrees. In fact, Shinji explicitly advocates using slope angles greater than 5 degrees.

> Applicant respectfully submits that, in view of the negative teachings present in the Shinji reference, and in view of a total lack of appreciation of the importance of controlling the angles of the side surfaces of the convex portions of the light directing member, it would not be obvious to combine the teachings of the respective references without completely reconstructing the teachings of the references in view of the Applicant's own disclosure.
>
> To the extent that the Office Action indicates that Shinji has built the embodiments where the slop angle is zero degrees and 2 degrees, Applicant submits that this is only speculative conjecture. All that Shinji discloses in this regard is to discuss how bad scattering reflection efficiency is when the slope angles are zero or 2 degrees." (Page 9)

First, applicants do not claim the **quality** of scattering or uniform of device; thus the argument is irrelevant. How good is scattering reflection efficiency????

Applicants mention that "when the slope angle is zero degrees or 2 degrees, the scattering reflection efficiency is less than one and **is bad (quality???) even when the height to width ratio is equal to or greater than 0.6**, thereby teaching away from using slope angled less than 5 degrees". Applicants also not claim "the height to width ratio is equal to or greater than 0.6", so that, this argument is irrelevant. Besides, **there are THREE elements, WIDTH, HEIGHT and SLOPE ANGLE, control the scattering properties of the light guide of Shinji.** However, it seems to be **only** SIDE ANGLE (slope angle) controlling the properties of the light guide in the instant application. Therefore, applicants cannot generalize the **scattering properties of the light guide based on the slope angle only and ignored the conditions of the width and the height that also disclosed in Shinji.**

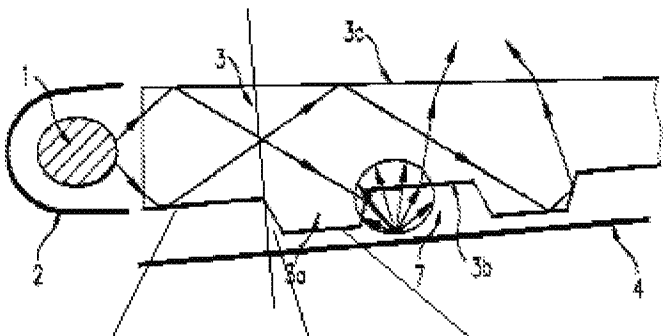
Shinji does not teach away from using the slope angle is less than 5 degrees. Shinii disclose in Figure 5-6 and states, in col. 7, lines 5-13 that the slope angle is zero degrees or 2 degrees [remember, all evidences appeared in Shinji can be used to reject]. The scattering reflection efficiency is less than one and is bad even with **the**

particular ratio of height to width to be equal to or greater than 0.6, but may **NOT for ALL height to width ratios**. Therefore, **applicants cannot generalize that the scattering reflection efficiency is less than one and is bad when the slope angle is zero degrees or 2 degrees with ALL height to width ratios**. Besides, applicants did not mention anywhere in the disclosure about the quality of **the scattering reflection efficiency**.

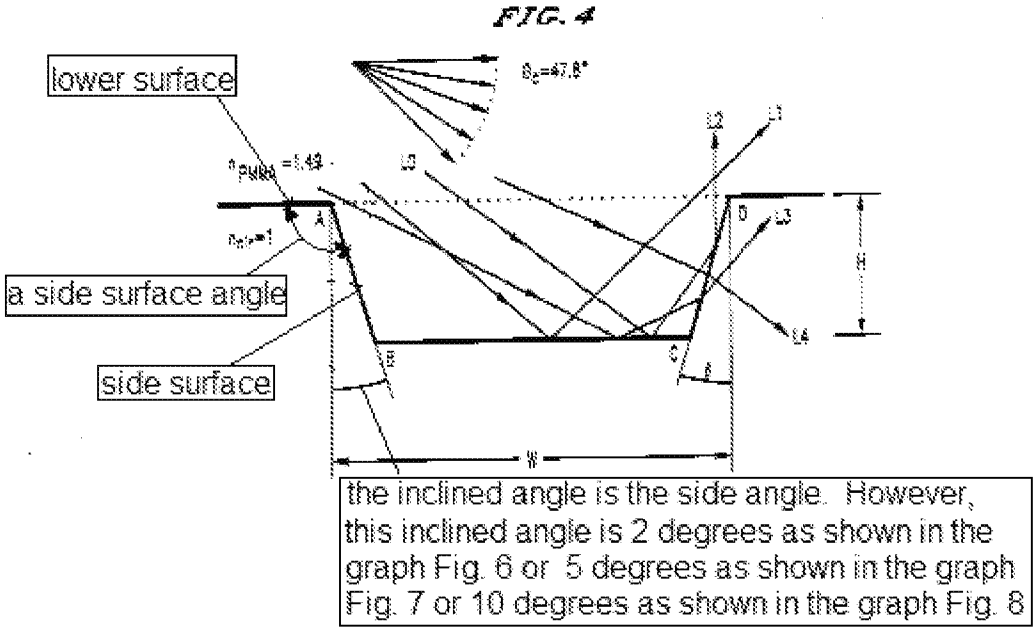
Furthermore, the quality of the light guide cannot be questioned since the quality has not been claimed. Therefore, the arguments are irrelevant. ONLY the structure of light guide with the slope angle less than 5 degrees has been claimed. Shinii discloses the structure of light guide with the slope angle less than 5 degrees regardless the quality of the light guide with height to width ratio.

The amended claims 1, 10, 11 recite the features of "side the angle (*inclined angle or slope angle*) between the side surface of the convex portion and a line perpendicular to the planar surface is about less than 5 degrees, which is rejected by Shinji et al. (US6259854B1) as shown in Figures 2 and 4 below:

FIG. 2



lower surface is parallel to planar surface; therefore the the angle between the side surface and a line perpendicular to the planar surface equal to the inclined angle or the side angle.

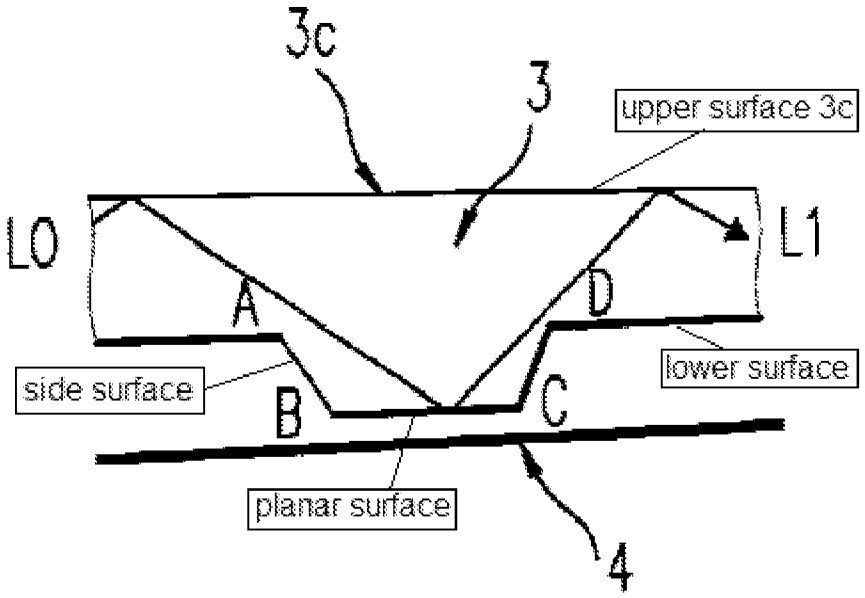


Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-2, 6-9, 11 and 14-18, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinji et al. (US6259854B1) in view of **Ishikawa et al. (US5575549A)**.



In regard to claims 1 and 2, Shinji et al. (Figs. 1 a-15b) disclose an auxiliary light source device comprising:

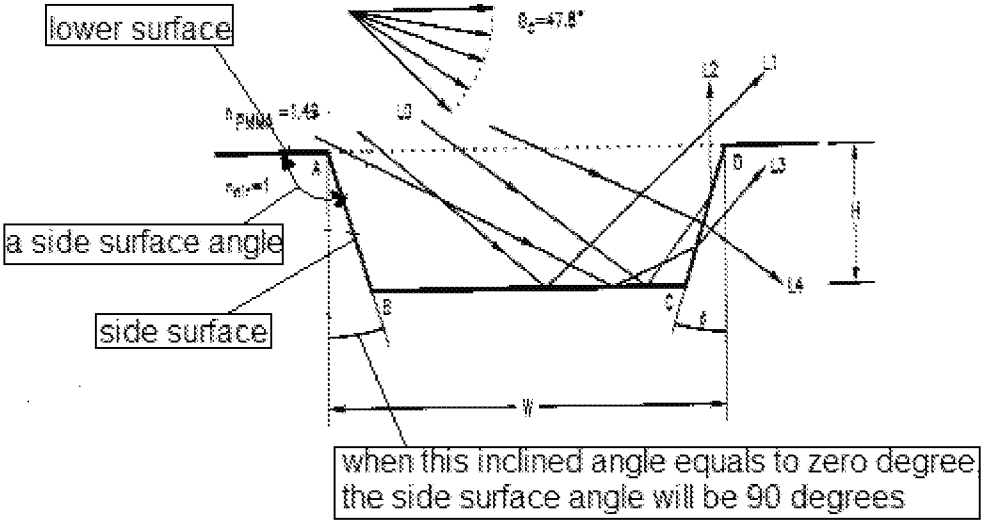
- a light source 1;
- a light reflecting member (reflector 4) which guides light from the light source into the light directing member,
- a light directing member 3 for directing incident light from the light source toward the reflector, with this structure of the light directing member 3, the light ray L4 can be outwardly along an orthogonal direction if L4 strikes the convex portion at different angle (see Examiner Answer mailed on 6/01/2005, Reply Brief Note mailed on 6/14/2006 and 11/20/2006).
- the light directing member including
    - an upper surface 3c and lower surface 3b

- a lower surface having a plurality of convex portions extending from the lower surface, each of the convex portions having a substantially planar surface which is substantially parallel to the lower surface, and a side surface connecting the planar surface and lower surface, and a side surface angle δ between the side surface of the convex portion and a light perpendicular to the substantially planar surface is less than 5 degrees, since a side surface angle δ =0° or 2° (col. 7 lines 5-6).

wherein

- the plurality of convex portions have the same side surface angle δ with each other.
- light reflected along an orthogonal direction L2/L3 to the liquid crystal display device is uniform (to emit primary light inputted from the side end plane of the light guide uniformly, in abstract and col. 1 lines 27-28) according to Figs. 5 (δ =0°) or Fig. 6 (δ =2°) or Fig. 7 (δ =5°).

FIG. 4



In regard to claims 21 and 24, Shinji et al. (Figs. 1 a-15b) disclose an auxiliary light source device comprising:

- a light source 1 extending along a width of the reflector to emit light along a length of the reflector 4;
- a light directing device 3 located above the reflector 4 and adjacent to the light source to direct light from the light source to the reflector such that a light distribution of light directed by the light directing device is substantially uniform along the length of the reflector, and such that the directed light is substantially perpendicular to the reflector;
- the light-directing device 3 includes upper surface 3c and lower surface 3b and a plurality of portions each extending from the lower surface 3b toward the reflector 4 at a 90° angle with respect to the lower or upper surface such that the light reflected along an orthogonal direction L2/L3 to the liquid crystal display device is uniform (to emit primary light inputted from the side end plane of the light guide uniformly, in abstract and col. 1 lines 27-28) according to Figs. 5 (δ =0°) or Fig. 6 (δ =2°) or Fig. 7 (δ =5°), spacing between the portions decreasing along the length of the reflector with increasing distance from the light source. With this structure of the light directing member 3, the light ray L4 can be outwardly along an orthogonal direction if L4 strikes the convex portion at different angle (see Examiner Answer mailed on 6/01/2005, Reply Brief Note mailed on 6/14/2006 and 11/20/2006), wherein the each portion includes a planar surface which is substantially parallel to the lower surface.

In regard to claims 11 and 14, Shinji et al. (Figs. I a-15b) disclose an auxiliary light source device comprising:

- an upper reflective surface to reflect impinging light above a certain incidence angle; Example see in Fig. 2, upper reflective surface is 3c.
- a lower reflective surface 3b having a plurality of convex portions extending toward the reflector to direct light from the auxiliary light source device to the reflector outwardly along an orthogonal direction; with this structure of the light directing member 3, the light ray L4 can be outwardly along an orthogonal direction if L4 strikes the convex portion at different angle (see Examiner Answer mailed on 6/01/2005, Reply Brief Note mailed on 6/14/2006 and 11/20/2006)
- an entry surface facing to the light source 1 connecting the upper and lower reflective surfaces through which light from a light source enters,
    - each convex portion includes a planar portion which is substantially parallel to the lower reflective surface and sides connecting the planar portion with the lower reflective surface, and a side surface angle δ between the side surface of the convex portion and a light perpendicular to the substantially planar surface is less than 5 degrees since a side surface angle $\delta = 0^\circ$ or 2° (col. 7 lines 5-6) or 5° (col. 6 lines 62).

Wherein

- the plurality of convex portions have the same side surface angle δ with each other.

- light reflected along an orthogonal direction L2/L3 to the liquid crystal display device is uniform (to emit primary light inputted from the side end plane of the light guide uniformly, in abstract and col. 1 lines 27-28) according to Figs. 5 (δ =0°) or Fig. 6 (δ =2°) or Fig. 7 (δ =5°).
- a planar portion is substantially parallel to the lower reflective surface (claim 14).

In regard to claims 6 and 15, Shinji et al. (Fig. 1 b) disclose the planar surface of each convex portion has a cross-section of substantially circular shape (Fig. 1 b).

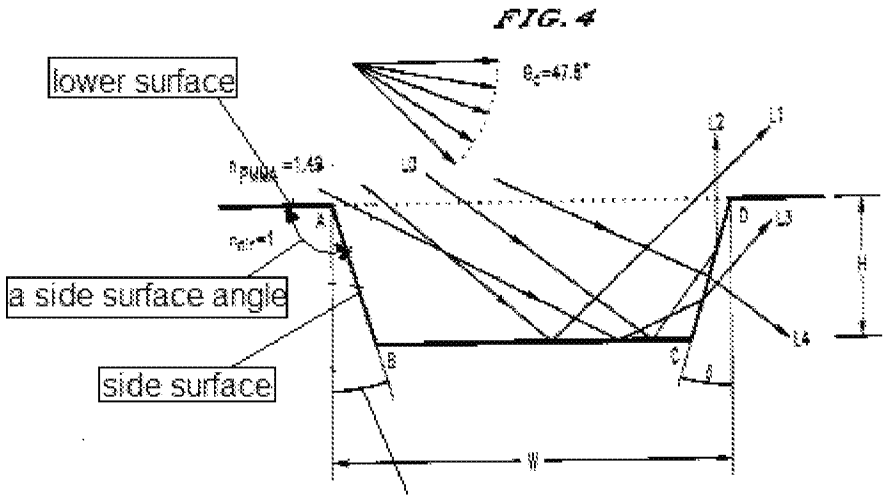
In regard to claims 7 and 16, Shinji et al. (Fig. lf) disclose the planar surface of each convex portion has a cross section of rectangular shape (Fig. 11f),

In regard to claims 8 and 17, Shinji et al. (Fig. 1 d or 1 g) disclose the plane surface of the plurality of convex portions has a bar shape extending perpendicular to a direction of light propagation in the light directing member 11 and along substantially an entire width of the reflective LCID device.

In regard to claim 9, Shinji et al. (Fig. 15b) disclose (Table 1) a distance/height between the lower surface and the planar surface of each convex portion is 12μm and 20μm that is less than 50μm.

In regard to claim 18, Shinji et al. (Fig. 15b) disclose a plurality of convex portion extending from the lower surface to ensure an uniform distribution of light along a length of the device (in abstract).

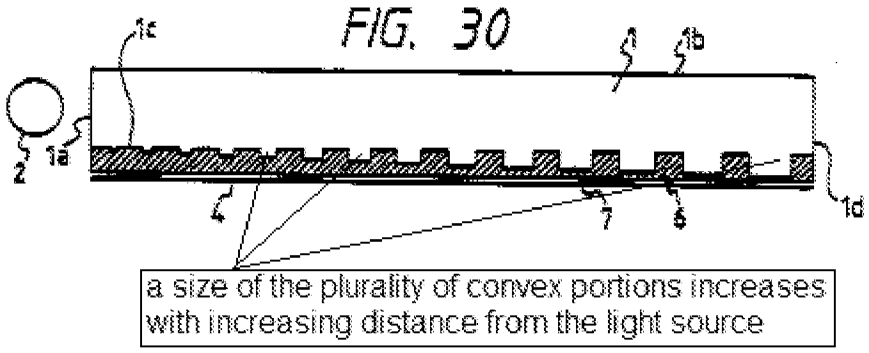
In regard to claims 25 and 27, Shinji et al. (Fig. 6-8) disclose the angle (*inclined angle or slope angle*) between the side surface and a line perpendicular to the planar surface is about between 0° and 10°.



this inclined angle is 2 degrees as shown in the graph Fig. 6 or 5 degrees as shown in the graph Fig. 7 or 10 degrees as shown in the graph Fig. 8

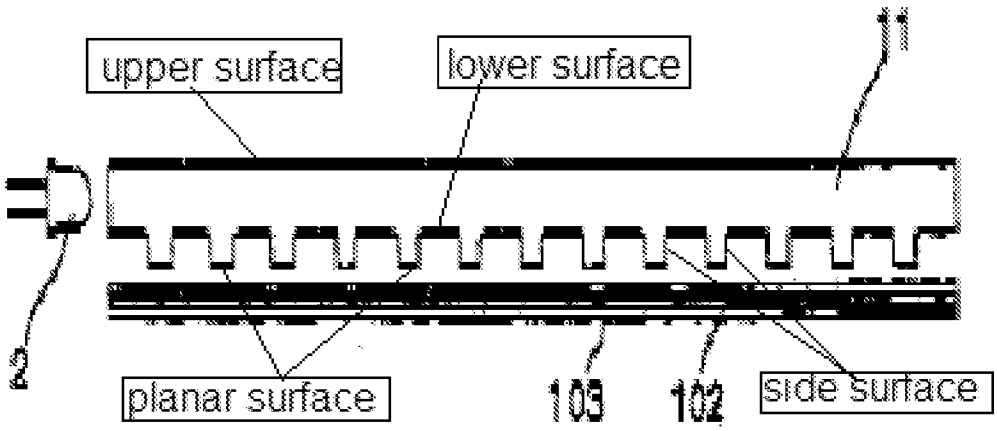
However, Shinji et al. fail to disclose (a) upper surface (upper reflective surface) and lower surface (lower reflective surface) parallel to each other (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source.*

Ishikawa et al. teach (Fig. 30) (a) upper surface 1b (upper reflective surface) and lower surface 1c (lower reflective surface) parallel to each other (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* for obtaining a bright surface light source device with a uniform brightness distribution (col. 2 lines 63-65).



Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Shinji et al. disclosed with (a) upper surface 1b (upper reflective surface) and lower surface 1c (lower reflective surface) parallel to each other (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* for obtaining a bright surface light source device with a uniform brightness distribution (col. 2 lines 63-65) as **Ishikawa et al.** taught.

2. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funamoto et al. (EP 08878720A) in applicant's IDS in view in view of Shinji et al. (US6259854B1) and **Ishikawa et al. (US5575549A)**.



Funamoto et al. teach (Fig. 10, third embodiment, page 8 line 53 to page9 line 35) a reflective liquid crystal display device, comprising:

- a display panel 102 inherently including two substrates spaced apart, liquid crystal sandwiched between the two substrates, and
- a reflector 103 to reflect light through the liquid crystal;
- an auxiliary light source device for supplying light to the display panel, including,
    - a light source 2,
    - a light directing member (light guide plate 11) for directing incident light from the light source toward the display panel, the light directing member having an upper surface and a lower surface parallel to each other, the lower surface having a plurality of convex portions, each having a substantially planar surface which is substantially parallel to the lower surface and a side surface connecting the planar surface and the lower

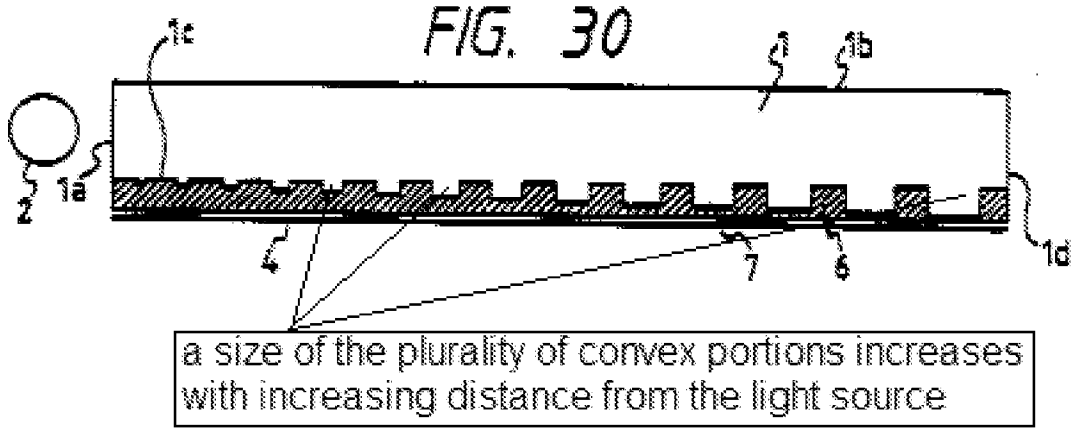
surface, the side surface angle δ between the lower surface and a surface connecting the planar surface of the convex portion being about 90°, wherein light reflected along an orthogonal direction to the display panel is uniform which is inherent with this structure of convex portions at surface of light directing member (light guide plate 11),

- a light reflecting member which guides light from the light source into the light directing member, said display panel being between said auxiliary light source and said light reflecting member.

However, Funamoto et al. fail to disclose (a) *a side surface angle δ between the side surface of the convex portion and a light perpendicular to the substantially planar surface is less than 5 degrees*; (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source.*

Shinji et al. teaches (Figs. I a-15b) disclose (a) a light guide with a side surface angle δ between the side surface of the convex portion and a light perpendicular to the substantially planar surface is less than 5 degrees since a side surface angle δ =0° or 2° (col. 7 lines 5-6) or 5° (col. 6 lines 62) for manipulating scattering reflection efficiency as shown in Figs. 6-8.

Ishikawa et al. teach (Fig. 30) (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* for obtaining a bright surface light source device with a uniform brightness distribution (col. 2 lines 63-65).

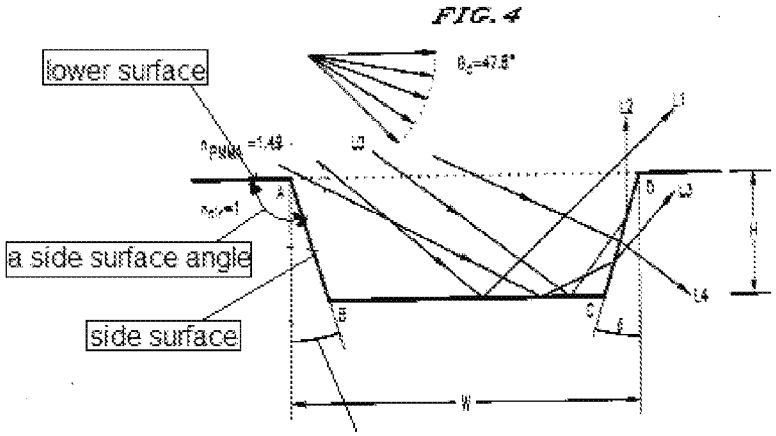


Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Funamoto et al. disclosed with(a) a light guide with a side surface angle δ between the side surface of the convex portion and a light perpendicular to the substantially planar surface is less than 5 degrees since a side surface angle $\delta = 0^\circ$ or 2° (col. 7 lines 5-6) or 5° (col. 6 lines 62) for manipulating scattering reflection efficiency as shown in Figs. 6-8 as Shinji et al. taught; (b) the light directing member having *a size of the plurality of convex portions increases with increasing distance from the light source* for obtaining a bright surface light source device with a uniform brightness distribution (col. 2 lines 63-65) as **Ishikawa et al.** taught.

3. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funamoto et al. (EP 08878720A) in applicant's IDS in view in view of Ishikawa et al. (US5575549A) as applied to claim 10 and in further view of Shinji et al. (US6259854B1).

Funamoto et al. fail to disclose the angle (*inclined angle or slope angle*) between the side surface and a line perpendicular to the planar surface is about between 0° and 10°.

Shinji et al. (Fig. 6-8) disclose the angle (*inclined angle or slope angle*) between the side surface and a line perpendicular to the planar surface is about between 0° and 10° for manipulating scattering reflection efficiency as shown in Figs. 6-8.



this inclined angle is 2 degrees as shown in the graph Fig. 6 or 5 degrees as shown in the graph Fig. 7 or 10 degrees as shown in the graph Fig. 8

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Funamoto et al. disclosed with the angle (*inclined angle or slope angle*) between the side surface and a line perpendicular to the planar surface is about between 0° and 10° for manipulating scattering reflection efficiency as shown in Figs. 6-8 as Shinji et al. taught.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571)272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

Chn
/HOAN C. NGUYEN/
Examiner, Art Unit 2871